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NEW AND LITTLE KNOWN STENINAE FROM BURMA
(COLEOPTERA STAPHYLINIDAE)

INTRODUCTION

Although little entomological research has yet been carried out in Burma, over 50 species of Steninae have already been recorded from that country. The extant material is owed mainly to the work of two assiduous collectors in two montane regions: L. Fea collected in the Karen (Carin, *sic.*) hills, a southern extension of the Shan Plateau, in the present Kayah State, in the years 1887 and 1888. The rich staphylinid material, containing mostly new and endemic forms, was studied by FAUVEL, and PUTHZ later described more new species of Steninae from undetermined material in the same collection. René Malaise, in the course of the 1934 Swedish Expedition to Burma and British India, collected 18 species of this subfamily, of which 14 were described as new by L. BENICK, in the Chinese border area of Kachin State in the North. Other records come from Tenasserim (Fea, Malaise), Rangoon and Pegu in Lower Burma, Teinzo, Bhamo, a lowland station between the Karen and Kachin hills, and the Mishmi hills in the extreme North (M. STEELE, 1935). Doherty's rich collections from the Ruby Mines of the upper Irrawady contained very few of these beetles.

The author has made a special search for Steninae in the course of five short trips to Burma during the past eighteen months, and the results of these collections, the first in Burma since the war, are studied here.

LOCALITIES AND HABITATS PROSPECTED

As the object in collecting was to obtain as many species of Steninae as possible in the little time spared from professional duties, rather than general entomological sampling, it was found more expedient

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to search suitable habitats equipped only with an aspirator and specimen tubes, instead of using more thorough but time-consuming methods such as sifting. In this way, Steninae were collected in three stations:

Pagan: this famous archeological site on the Irrawady river now suffers a dry climate and vegetation, all watercourses except the Irrawady itself disappearing after the end of the monsoon. During the dry season the river recedes within vast sand banks, leaving no suitable cover for stenine habitats. Only two forms, the ubiquitous lowland species *S. cursorius* L. Bck., and *S. cribellatus* Mots. were found here on a single occasion, at the end of the monsoon, in seepage on the river bank, although ripicolous species of other groups were found in abundance even during the dry season.

Inya Lake, Rangoon: 5 species of *Hypostenus* were collected here, on the only two occasions they were searched for, at the roots of low-growing plants under tall shade trees at the edge of the lake, a situation which provided mixed habitats for both humicolous and plant-climbing species. The high rainfall and lush vegetation of Lower Burma appears to support a large population of *Stenus*, although in very limited numbers of species.

Taunggyi: the town, capital of Shan State, lies at 1500 m in the central Shan Plateau, itself near the centre of the vast mass of mountains that extend from the main Himalayan range through Assam, Burma and Yunan, and ends in the Northern parts of Vietnam, Laos, Thailand, and Tenasserim. The montane character of the faunas of this area and their affinities with those of the central Himalaya are well known, and are born out to an extraordinary degree by the Steninae. The composition and affinities of the material collected at Taunggyi will be discussed below.

A table is given (p. 346) of captures made at Taunggyi. Records in the first four columns were all from the same place, referred to as locality I: a small gully shaded by trees, situated in a grazed field at the Southern end of the town, in which seepage water formed one of the heads of a stream. The gully provided a variety of microhabitats, but principally a layer of dead leaves on a damp soil substrate, in which all the humicolous species were found (*Stenus venator* Fv. and *Parastenius* spp.).

In as much as this table may contribute to determining the imaginal emergence periods of different species, it is only these records which point to a species' absence as well as its occurrence, for this spot was

searched thoroughly on every visit. The humidity of the gully varied, from a constant trickle of water in a central channel, to much drier conditions, where only a few damp patches remained in the most sheltered parts; on the last visit in April 1980 the gully had dried up completely, and no insects were found.

This disappointment led me to search for another suitable collecting ground, and to the discovery of the remarkable site (loc. 2 in the table) where 147 exx. belonging to 21 different species were taken in less than two hours. This locality is situated on the flank of the hill dominating the town to the East, on the edge of a remnant of primary forest, and includes a permanent stream and cascade, and two small reservoirs. The richness of the fauna found here can be attributed to this diversity of different biotopes and the relative stability of the environment. Four distinct habitats were searched (unfortunately only three collecting tubes were used, so it was not possible to make a precise count of the species found in each one, habitats of the more distinctive species were in some cases noted from memory):

1. Under stones on short turf near the edge of a small reservoir (flooded during monsoon). 1 ex. *S. (Hypostenus) verticalis* L. Bck. and a series of *S. (Hypostenus) delectus* Puthz were found here, presumably sheltering: *S. (Hypostenus) delectus*, like many other *Hypostenus*, is a plant climber. A few unrecorded *Parastenus* were also found in the same place.

2. The brick walls of an artificial waterfall on a permanent stream (*Dianous* habitat). In a previous paper (1980, Ent. Basil. 5) it was remarked that many *Dianous* species appear to be narrowly restricted to their habitats by the degree of shade, humidity, or other factors, and occasionally mutually exclusive within a very small area, and the two species of *Dianous* found here illustrate such a case: *D. shan* n. sp. was found in the fine moss growing in the spray zone of the cascade, in the company of *Stenus beesoni* Cam., a few exx. straying into the habitat of *D. yao* n. sp., which shunned the spray zone and monopolised the bare brick wall adjacent to it. All these insects were obtained by splashing the walls so as to dislodge them from the crevices and moss, where they are difficult to see as they remain characteristically immobile for long periods. It is interesting to note, in confirmation of remarks regarding other species in the paper quoted above, that the insects' colour appears in this case to be protective. *D. shan* n. sp., the moss inhabitant,

being bright green, while *D. yao*, living on the bare stone, is black, with only a faint metallic reflex.

3. The very wet vegetation and dead plant refuse lying on and at the base of the wall mentioned above. A few stenines strayed here from neighbouring habitats (*D. yao* n. sp., *S. virgula* Fv.), but *S. circumflexus* Fv. was only found here, in the wettest decomposing litter.

4. A layer of dead leaves at the roots of grasses and low growing flowering plants under shade trees at the edge of the reservoir, in conditions similar to those of loc. 1, but with richer vegetation and permanent standing water. Well over half of all the Steninae taken that day were found here, including *S. venator* Fv. and most of the *Parastenius*.

This site was revisited by Ko Nini on 27.V.80, who collected the insects listed in column 6 of the table (p. 346) but did not make precise records of habitats. Although fewer Steninae were collected on this occasion, the material contained 2 species not previously recorded from Taunggyi.

Holotypes and some Paratypes of the new species described in this paper, together with representatives of most of the species mentioned, have been deposited in the Museo Civico di Storia Naturale « G. Doria » Genoa, Italy. The rest of the material has been divided between the collections of the B.M.N.H., the author, and Dr. Puthz.

Measurements of the total length of insects are given in millimetres. Other measurements, of anatomical parts, were made on a Nikon s.M.Z.Z. 2 microscope at x 80 magnification, using an eye-piece micrometer. Each unit of measurement thus equals .025 mm.

RECORDS AND SYSTEMATICS

Dianous shan n. sp.

This new *Dianous* species belongs to that group of small immaculate species, with the vertex of the head depressed, which until recently were thought to belong to the genus *Stenus* Lat. (*nigrovirens* group), and resembles *D. tonkinensis* (Puthz) and *D. reformatior* Rougemont.

Length: 3.6-4.1 mm. Head, pronotum and elytra shining, light green with a coppery, and sometimes, a dark blue reflex; abdomen black with a bronze or coppery reflex; palpi testaceous with terminal

segments infusate; antennae dark rufous; legs rufous, more or less broadly infusate at knees.

Head broader than elytra between humeral angles (35:31); vertex shallowly and evenly depressed to median line; punctuation even, rugose; diameter of punctures about equal, or slightly inferior to diameter of second antennal segment. Antennae when reflexed overlap the posterior margin of pronotum by less than the length of terminal segment; segments of antennal club somewhat pear-shaped, about twice as long as broad, and densely pilose.

Pronotum elongate (28:25), broadest at middle, rounded anteriorly, slightly sinuate posteriorly; surface somewhat uneven, the punctuation as coarse as that of head, but closer, the interstitial rugosities narrower and sharper, with a tendency to becoming confluent laterally on disc in some exx.

Elytra narrow, parallel, elongate; maximum length of elytra: 38; maximum breadth: 35; length of suture: 32; surface fairly even; punctuation slightly coarser than that of pronotum, rugose, becoming confluent near suture and on disc posteriorly, the rugae directed laterally from suture, and obliquely forward from sutural angles.

Abdomen moderately tapered. Width of segments III: 24; width of segment VII: 20; tergites shining, without microreticulation, moderately coarsely and densely punctate: interstices of tergite III narrower than diameter of punctures; interstices of tergite IV equal to and larger than diameter of punctures; paratergites narrow, less than diameter of second antennal segment, finely and sparsely punctate.

Posterior tarsi long. Length of metatibia: 37; length of tarsi: 30; metatarsal segments: I:13; II:5; III:4; IV:3; V:6 fourth tarsal segments simple.

Male: sternite VII shallowly depressed and excavate posteriorly, with finer and denser punctuation and pubescence; posterior excavation of sternite VIII broad and shallow; sternite 9: fig. 1B; aedeagus (fig. 1A): apex of median lobe with longitudinal ventral structures.

♂ Holotype, 1 ♂ Paratype: Taunggyi, on vertical clay bank under a culvert on seepage gully, 22.X.1979; 1 ♂ Paratype: Taunggyi, on mossy rock face of cascade below town, 1.I.1980; 9 ♂♂, 11 ♀♀ Paratypes: Taunggyi, on mossy wall in spray-zone of artificial waterfall, 6.IV.1980; 5 ♂♂, 3 ♀♀ Paratypes: *ibid.*, 27.V.1980.

This new species may be distinguished from the widely distributed *D. tonkinensis* (Puthz) by its smaller size, its lighter green and coppery forebody, the less rugosely punctate head, with shallower median depression of vertex, and by the aedeagus.

Dianous y a o n. sp.

This new species also belongs to the *nigrovirens* group of species, and appears to be most closely related to *D. viriditinctus* (Champ.) and *D. aurichalceus* (Champ.).

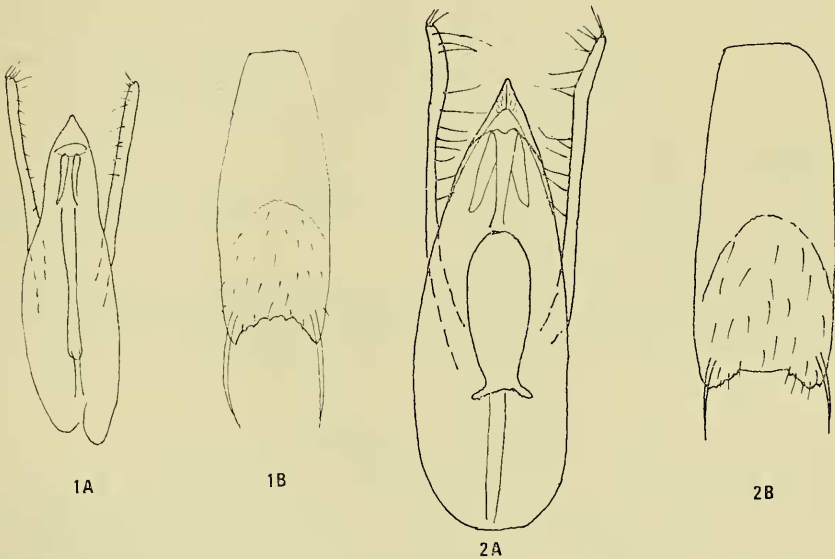
Length: 4.5-5.5 mm. Black, the head, pronotum and elytra with a faint bronze or greenish reflex; palpi pitchy brown, with first segments lighter; antennae pitchy brown, with clubs lighter (rufous); legs pitchy brown, with basal halves of femora, and apices of tibia lighter. Punctuation coarse, rugose, becoming confluent on elytra, the general appearance of forebody relatively matt.

Head relatively narrow (39), as broad as elytra at humeral angles (type), narrower than elytra at their greatest breadth; vertex broad: average distance between eyes: 23, deeply concavely depressed to median line, without convexities on either side. Punctuation rugose, even, and coarse, the diameter of punctures about equal to that of the basal third of second antennal segment; interstitial rugosities not forming linear rugae, but even, as in a honeycomb. The antennae, when reflexed, overlap the hind margin of the pronotum by about half the length of terminal segment; antennal segments: I:5; II:4; III:8; IV:5; V:5; VI:4.5; VII:4.5; VIII:4; IX:4; X:4; XI:5, segments of club 2.5 wide, densely pubescent.

Pronotum slightly elongate: 32:29, its greatest width 3/8ths from the anterior margin, with sides markedly sinuate to posterior margin; surface somewhat uneven; punctuation faintly coarser than that of head, very rugose, but not confluent.

Elytra quadrate, their proportions in relation to body size variable; type: greatest length and breadth: 43; length of suture: 38; surface somewhat uneven, the punctuation about as coarse as that of pronotum, but becoming confluent at places on disc, where it forms laterally orientated rugae, about the length of three to five punctures. The insect is fully winged.

The abdomen is not strongly narrowed towards apex; breadth of 3rd segment (measured from outer ridge of paratergites): 31; breadth of 7th segment: 23; tergites fairly convex, shining, without microsculpture, densely and extremely finely punctate, with long golden pubescence. Paratergites broad and densely punctate; paratergites of segment IV much broader than 2nd antennal segment: 3.5-2. Tergite IX impunctate and glabrous; tergite X shining, impunctate dorsally, but with a dense fringe of setae laterally and apically, the tergite deeply concavely depressed at apex.



Figs.: 1A: *Dianous shan* n. sp., aedeagus, ventral view; 1B: *ibid.*, male 9th sternite; 2A: *Dianous yao* n. sp., aedeagus, ventral view; 2B: *ibid.*, male 9th sternite.

Legs averagely robust; length of metatibia: 39; length of tarsi: 31; tarsal segments: I:11; II:5; III:4; IV:3; V:7; Fourth tarsal segments all simple.

Male: legs without sexual characters. Metasternum with a wide triangular patch of coarse, regular microreticulation. Sternite VI slightly depressed medially; sternite VII more strongly depressed between longitudinal prominences in posterior 1/3rd, with a round, shallow excavation posteriorly; sternite VIII with a deep equilateral triangular

excavation; sternite IX: fig. 2B. Aedeagus (fig. 2A) with characteristic internal structure.

Female: valvifer: fig. 2C.

♂ Holotype, 9 ♂♂, 3 ♀♀ Paratypes: Taunggyi, on brick and stone wall near, but outside the spray zone of a small artificial waterfall, 6.IV.1980.

Dianous yao n. sp. is close to *D. aurichalceus* (Champ.), from which it differs by its larger size, darker and less metallic colour, deeper depression of the vertex of the head. It is more closely related to *D. viriditinctus* (Champ.).

Stenus (s. str. & **Nestus** Rey) **beesoni** Cam.

Stenus beesoni Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 346.

Stenus beesoni Puthz, 1968, Dtsch. Ent. Z., N.F. 15, 454.

2 ♂♂: Taunggyi, in fine moss in spray zone of waterfall, with *Dianous shan* n. sp., 6.IV.1980.

This evidently montane species was described from the United Provinces (Uttar Pradesh) of North India, and is new to Burma.

Stenus (s. str.) **venator** Fv.

Stenus venator Fauvel, 1895, Rev. d'Ent., XIV, 208.

Stenus venator Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 328.

Stenus venator Puthz, 1969, Est. dl. Ann. Mus. Civ. Stor. Nat. Genova, LXXVII, 641.

2 ♂♂: Taunggyi, under dead leaves in shaded seepage gully, 12.III.1979; 1 ♂, 1 ♀: *ibid.*, 1.I.1980; 6 ♂♂, 11 ♀♀: *ibid.*, in dead leaves at roots of grasses at the edge of reservoir, 6.IV.1980.

A diagnosis of this species is given by PUTHZ (1969). It was known hitherto only by the types collected in the Karen Hills by L. Fea, at altitudes between 900 and 1400 m so it is not yet known whether it is an endemic of the Shan Plateau or has a wider montane distribution. According to PUTHZ, its closest relative is *S. formosanus* L. Bck., an endemic of Taiwan, which suggests that members of this *S. clavicornis* group, palearctic in origin, may have in Asia a distribution similar to the genus *Carabus*, which has isolated endemic forms outside the main range of the groupe on its South-Eastern fringes.

Stenus (Hypostenus) verticalis L. Bck.

Stenus verticalis L. Benick, 1932, Arch. Hydrobiol., Suppl. II.

1 ♂: Taunggyi, under a stone on turf at the edge of a small reservoir, 6.IV.1980.

This distinctive species, with large red elytral maculae is related to *S. cicindeloides* Schall. It was described from Java, and PUTHZ has informed me of records from the neighbouring montane regions of Yunan and Vietnam. New to Burma.

Stenus (Hypostenus) delectus Puthz

Stenus delectus Puthz, 1978, Ann. Hist. nat. Mus. Nat. Hung., 70, 127.

6 ♂♂, 7 ♀♀: Taunggyi, under stones on turf at the edge of a small reservoir, 6.IV.1980.

This species was described from a single ex. from beaten material from Assam, and has not been recorded since. It is therefore new to Burma.

The above series shows considerable variation in the extent of the straw-coloured elytral markings, which give it a superficial resemblance to the *S. flavovittatus-malaisi* complex, also recorded from Burma.

Stenus (Hypostenus) amoenus L. Bck.

Stenus amoenus L. Benick, 1916, Ent. Mitt., 5, 249 f.

Stenus rufoplagiatus Champion, 1924, Ent. Mon. Mag., 40, 160.

Stenus rufoplagiatus Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 355.

Stenus amoenus L. Benick, 1942, Stett. Ent. Z., 103, 67.

Stenus amoenus Puthz, 1968, Not. Ent., 48, 98.

Stenus amoenus Puthz, 1971, Bull. Soc. ent. Suisse, 43, 192.

1 ♀: Taunggyi, at roots of grasses on damp soil in seepage gully, 1.I.1980; 3 ♀♀: Taunggyi, 6.IV.1980.

This species, which shows some variation in size, punctuation, and the extent of the elytral spot, was previously known from Ceylon, N. India and Assam; it is new to Burma.

Stenus (Hypostenus) pustulatus Bernh.

Stenus pustulatus Bernhauer, 1914, W.Z.B., LXIV, 95.

Stenus pustulatus Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 354.

11 ♂, 9 ♀♀: Rangoon, Inya Lake, at roots of low-growing plants on a shaded bank at the edge of lake, 5.I.1980; 1 ♀: *ibid.*, 2.IV.1980; 4 ♂♂, 3 ♀♀: *ibid.*, 22.VIII.1980.

This species was described from Pegu, also in lower Burma, and not recorded since. * The male has not previously been described. Metatibia with a tooth on inner edge 1/5th from apex. Sternite V with a slight apico-median depression, on which punctuation and pubescence are fine and dense; sternite VI with a deep concave, semi-circular depression, finely punctate and pubescent, and shallow apical emargination; sternite VII without depression, but with fine punctuation and pubescence apico-medially; sternite VIII with a deep, narrow excavation to 1/3rd of its length; sternite IX: fig. 3B. Aedeagus (fig. 3A) with flagellum.

***Stenus (Hypostenus) angusticollis* Epp.**

Stenus angusticollis Eppelsheim, 1895, Dtsch. Ent. Z. 405.

Stenus angusticollis Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 371.

Stenus angusticollis Puthz, 1976, Dtsch. Ent. Z., N.F. 23, 4.

1 ♂, 1 ♀: Taunggyi, at roots of grasses on damp soil in seepage gully, 1.I.1980; 1 ♂, 2 ♀♀: Rangoon, Inya Lake, climbing on plants under shade trees at edge of lake, 5.I.1980.

This species was described from Pegu in Lower Burma, and subsequently found in the United Provinces and Assam.

***Stenus (Hypostenus) oedichroides* n. sp.**

Bicolorous, «paederoid» species, showing the colour pattern characteristic of members of the *flavidulus* group.

Length: 4.5-4.6 mm.

Clypeus and (sometimes) frons, thorax, mesosternum, parts of elytra, and abdomen excepting segments VII-X, reddish-yellow; head, other meso- and metathoracic pieces, and last three abdominal segments pitchy black. The colour pattern of the elytra variable: in the Holotype

* PUTHZ has recently communicated the following records from Burma: 1 ♀: Thingannyinaung to Sukli, Dawna Hills, 900-2100', 27.X.1911, Gravely (F.M.Ch.). 1 ♂, 1 ♀: Bhamò; 1 ♀: Palon - Pegu: Mus. Genoa (det. by FAUVEL as *bivulneratus* Motz.).

it is similar to *S. fascipennis* L. Bck., with only humeral angles (broadly), and sutural angles yellow; in the Paratype the black band is interrupted, leaving a central, large spade-shaped patch and lateral portions pitchy black. In both exx. the anterior edge of tergite VII (mostly hidden by t. VI) is also reddish-yellow, all appendages testaceous. Punctuation of forebody coarse, that of abdomen very fine.

Head only slightly narrower than elytra at their greatest width (30:33), slightly broader than elytra at humeral angles (28); the broad vertex (average distance between eyes: 17) with broad sulcae, leaving a smooth raised median portion of vertex. Punctuation averagely coarse, and sparse: the diameter of punctures about equal to the diameter of the base of 3rd antennal segment; the punctuation is uneven, leaving impunctate patches laterally and on frons, the interstices elsewhere about equal to the diameter of punctures. Antennae slender; when reflexed they overlap the posterior margin of pronotum by 1-2 terminal segments; segments of club elongate, about three times as long as broad.

Pronotum clearly elongate (28:22), only slightly constricted before and behind its greatest width, which lies somewhat behind the middle. Punctuation coarser and denser than that of head, but irregular, especially on median line (in Type nearly impunctate), the diameter of punctures about equal to that of the third antennal segment, the interstices of more regularly punctate areas greater than radii of punctures.

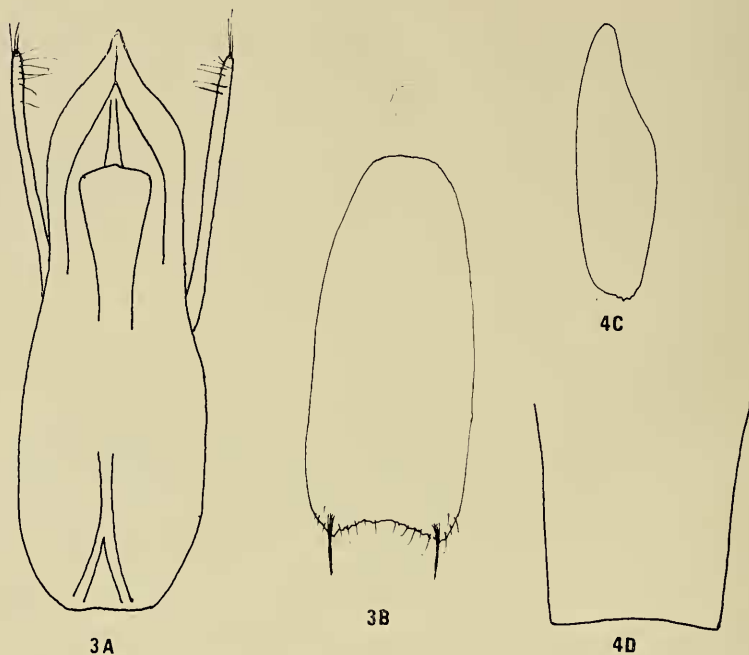
Elytra only slightly broader than head, quadrate, slightly and gradually widened from humeral angles to 1/6th from apico-lateral angles; maximum length: 36; length of suture: 31. Punctuation slightly coarser than that of pronotum, more regular, the interstices about equal to the radii of punctures. Pubescence very short, not evident.

Abdomen cylindrical, not tapered before 7th segment, the punctuation very fine, and sparse; punctures on tergite IV smaller than eye facets, the interstices from 2 to 4 times as great as diameter of punctures. Tergite VII with a membranous apical fringe; tergite VIII very slightly concavely excised on posterior margin; tergite IX with an apical «pallissade» fringe; tergite X rounded apically, with a concave median depression.

Legs slender, the posterior tarsi half as long as metatibia (41:22); tarsal segments: I:9; II:3; III:2; IV:4; V (without onychium): 3.
Male: unknown.

Female: sternite VIII rounded apically; valvifer: fig. 4.

♀ Holotype: Rangoon, Inya Lake, climbing on plants on shaded bank at edge of lake, 5.I.1980; 1 ♀ Paratype: ibid., 2.IV.1980.



Figs.: 3A: *Stenus (Hypostenus) pustulatus* Bernh., aedeagus, ventral view; 3B: ibid., male 9th sternite; 4C: *Stenus (Hypostenus) oedichiroides* n.sp., female valvifer; 4D: ibid., posterior margin of 8th tergite.

S. oedichiroides n. sp. differs from *S. flavidulus paederinus* Champ. which it closely resembles in size and colour, by its slightly more slender build, with proportionately narrower elytra, finer abdominal punctuation, and the conformation of the eighth tergite, which has a triangular apical emargination in *S. flavidulus paederinus* Champ., and is imperceptibly, broadly concave in the new species. The abdominal punctuation and conformation of the eighth tergite are comparable with those of *S. elegantulus* Cam. from Malaya, which however may be distinguished at once by the presence of sharp apico-lateral teeth on the ninth sternites and valvifers.

S. oedichiroides n. sp. also bears a close superficial resemblance to bicolorous exx. of *S. loebli* Puthz. The nominal form of this species,

from Ceylon and S. India, is black, with only the humeral angles narrowly brown, but exx. from Bangladesh recently communicated to me by PUTHZ are coloured just like the members of the *flavidulus* group under discussion. *S. loebli* Puthz can be distinguished easily from *S. oedichiroides* n. sp. by its much coarser abdominal punctuation, which is nearly as strong as that of the fore-body, and the insect is also rather more robust in build, with a narrower head.

***Stenus (Hypostenus) gastralis* Fv.**

Stenus gastralis Fauvel, 1895, Rev. d'Ent., XIV, 214.

Stenus gastralis Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 378.

Stenus gastralis Puthz, 1969, Bull. Inst. r. Sci. nat. Belg., 45, 9, 21.

1 ♂: Rangoon, Inya Lake, in dead leaves under lowgrowing plants under shade-trees at the edge of lake, 8.IV.1980.

Rangoon is the type locality for this species, first taken by L. Fea. It has since been recorded from Tavoy and Annam (CAMERON), and PUTHZ has given me a record for Bengal: Boldipukur, III.1958, Pussetto leg.

***Stenus (Hypostenus) wasmanni* Fv.**

Stenus wasmanni Fauvel, 1895, Rev. d'Ent., XIV, 214.

Stenus wasmanni Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 376.

Stenus wasmanni Puthz, 1975, Ent. Basil., 1, 189.

Stenus wasmanni Puthz, 1969, Bull. Inst. r. Sci. nat. Belg., 45, 9, 31 ff.

Stenus wasmanni Rougemont, 1980, Ent. Basil., 5, 181.

1 ♂: Taunggyi, at roots of grasses in seepage gully, 18.IV.1979;
2 ♂♂, 6 ♀♀: Taunggyi, under stones etc., 6.IV.1980.

This species was described from the Burmese material collected by L. Fea. CAMERON, PUTHZ and ROUGEMONT record a wide Himalayan distribution for it, ranging from the Punjab though U.P., Nepal, Darjeeling and Assam. The aedeagus is figured by PUTHZ (1969).

***Stenus (Hypostenus) cribellatus* Mots.**

Stenus cribellatus Motschoulsky, 1857, Bull. Mosc., XXX, IV, 515.

Stenus cribellatus Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 375.

38 exx.: Pagan, at roots of plants in seepage water on a vertical clay bank at edge of Irrawady river, with *S. cursorius* L. Bck., 2 exx.

at light, 21.X.1979; Rangoon, Inya Lake, under dead leaves at roots of low-growing plants on shaded edge of lake, 5.I.1980; 1 ♀: Taunggyi, 6.IV.1980.

The series from Pagan are only a sample from a mixed colony of both this and the following species. The occurrence at light of two exx., although a rare phenomenon with *Stenus* spp., is not surprising in this case in view of the extraordinary profusion of the species less than 100 m away.

S. cribellatus was described from « Ind. Or. », and later taken in Rangoon by Malaise. The author has also taken the species in Ceylon.

***Stenus* (*Hypostenus*) *cursorius* L. Bck.**

Stenus cursorius L. Benick, 1921 (nom. nov.), Ent. Mitt., 10, 193.

Stenus planifrons Fauvel, 1889, Rev. d'Ent., 8, 253.

Stenus planifrons Fauvel, 1903, Rev. d'Ent., 22, 262.

Stenus planifrons Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 382 f.

Stenus cursorius L. Benick, 1942, Ark. Zool., 33 A, 24.

Stenus cursorius Puthz, 1969, Bull. Inst. r. Sci. nat. Belg., 45, 9, 26 f.

1 ♀: Taunggyi, under stone in marsh, 12.III.1979; 3 ♀♀: ibid., 6.IV.1980; 1 ♀: Rangoon, Inya Lake, 5.I.1980; 25 exx.: Pagan, at roots of plants in seepage, on bank of Irrawady R., 21.X.1979.

S. cursorius L. Bck. has already been recorded from Rangoon. It is very widely distributed in the oriental region, from the Indian subcontinent to Australia and New Caledonia. It is closely related to the preceding species, with which it was found cohabiting in very large numbers at Pagan.

***Stenus* (*Parastenus*) *maculifer* Cam.**

Stenus (*Mesostenus*) *maculifer* Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 395.

Stenus facialis L. Benick, 1940, Mitt. Muenchn. Ent. Ges. 30, 569.

Stenus cruentatus L. Benick, 1942, Ark. Zool., 33A, 17, 30.

Stenus facialis L. Benick, 1940, Mitt. Muench. Ent. Ges. 30, 369.

Stenus maculifer Puthz 1967, Dtsch. Ent. Z., N.F. 15, 461.

5 ♂♂, 10 ♀♀: Taunggyi, in dead leaves on damp soil in seepage gully, 12.III.1979, 18.IV.1979, 22.X.1979, 1.I.1980. 1 ♂, 7 ♀♀: Taunggyi at roots of plants at the edge of reservoir, 6.IV.1980; 1 ♀: ibid., 27.V.1980.

S. maculifer Cam. was described from the Naga Hills of Assam, but has since been shown to occupy a vast range, from Kashmir to Viet-

nam, and, outside the usual « Greater Himalayan » range of most of this group, in Fukien (PUTHZ). In Burma it is known from Kambaiti in Kachin State (*S. cruentatus* L. Bck.), but is not represented in the material collected by Fea in the Karen Hills.

***Stenus (Parastenus) stigmaticus* Fv.**

Stenus stigmaticus Fauvel, 1895, Rev. d'Ent., XIV, 210.

Stenus stigmaticus Cameron, 1930, Faun. Brit. Ind., Col. Staph. I., 389.

Stenus stigmaticus Puthz, 1969, Bull. Inst. r. Sci. nat. Belg., 45, 9, 40.

Stenus stigmaticus Puthz, 1976, Dtsch. Ent. Z., N.F. 23, 25.

2 ♂♂, 1 ♀: Taunggyi, under dead leaves in seepage gully, 12.III.1979; 4 ♂♂, 5 ♀♀: Taunggyi, at roots of plants at edge of reservoir etc., 6.IV.1980.

This species was first taken in the Karen Hills by Fea, but was subsequently found in Assam and Darjeeling, and more recently, in Tonkin. The aedeagus is figured by PUTHZ (1969).

***Stenus (Parastenus) virgula* Fv.**

Stenus virgula Fauvel, 1895, Rev. d'Ent., XIV, 210.

Stenus virgula Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 394.

Stenus virgula Puthz, 1969, Bull. Inst. r. Sci. nat. Belg., 45, 9, 42.

Stenus virgula Puthz, 1976, Dtsch. Ent. Z., N.F. 23, 7.

Stenus virgula Puthz, 1978, Ann. Hist. nat. Mus. Nat. Hung., 70, 130.

4 ♂♂, 6 ♀♀: Taunggyi, under dead leaves on damp soil in seepage gully, 12.III.1979; 10 ♂♂, 19 ♀♀: Taunggyi, under dead leaves at roots of plants at edge of reservoir etc., 6.IV.1980; 4 ♂♂, 4 ♀♀: *ibid.*, 27.V.1980.

Stenus virgula Fv. is another species first described from Fea's material, and later recorded from many localities in Eastern Asia, from Nepal to Kwangtung and Taiwan.

***Stenus (Parastenus) n i n i i* n. sp.**

This new species is very close to *S. virgula* Fv., and a comparison with that species is sufficient for its diagnosis.

Length: 5 mm. Pitchy black with a strong brassy reflex; each elytron with an oblong yellow spot in the posterior half; all appendages testaceous, the antennae gradually infusate towards apex.

Proportions of Holotype. Breadth of head: 30; average distance between eyes: 18; length of pronotum: 28; breadth of pronotum: 16;

maximum length of elytra: 40; maximum breadth of elytra (situated 2/3rds from anterior margin): 38; length of suture: 31; length of metatibia: 35; length of metatarsus: 21; 1st metatarsal segment about as long as following 4 segments.

Male: legs without sexual characters. Sternites III - V densely and regularly punctate, the punctures about the size of eye facets, the interstices narrower than diameter of punctures; sternite VI with a deep semi-circular apical depression, extending to about half the length of sternite, in which the punctuation is finer, except on extreme apico-median portion, the punctures becoming elongate and rasp-like; sternite VII similar to the last, the depression extending to base of sternite, and enclosed by two keels in apical half; sternite VIII broadly flattened on median axis, the apex with an equilateral-triangular excision 1/10th the length of sternite; depressions of sternites VII and median portion of sternite VIII with strong microreticulation, while the depression of sternite VI is shiny; the pubescence of sternal depressions long, dense, and golden, in sharp contrast to the rest of the ventral abdominal pubescence, which is whitish; sternite IX (fig. 5B) with stout apico-lateral teeth, and finely denticulate outside these; aedeagus (fig. 5A) with median lobe broad, apex triangular.

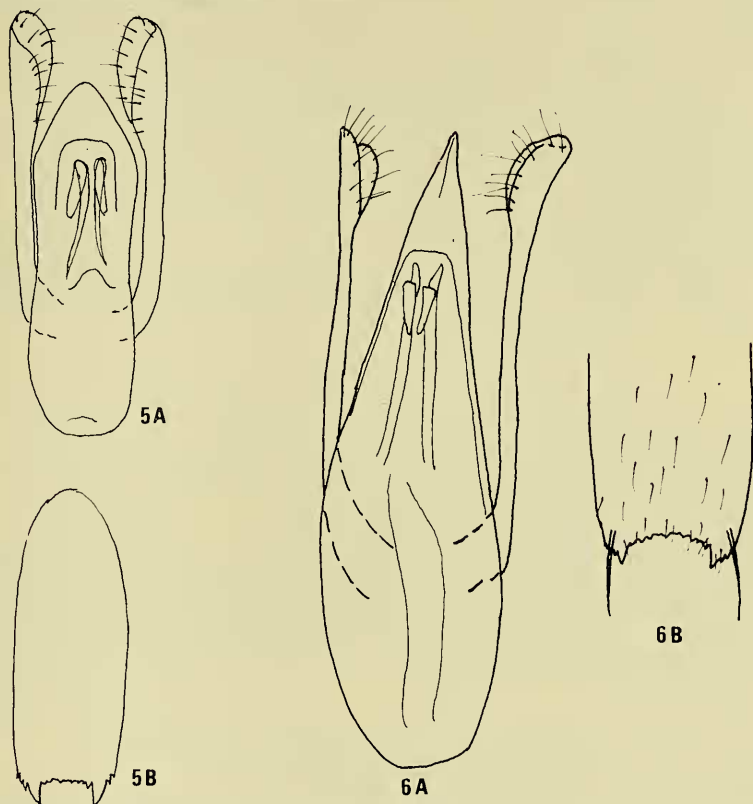
♂ Holotype: Taunggyi, 6.IV.1980.

S. ninii n. sp. closely resembles *S. virgula* Fv. in size, habitus, and punctuation, and runs to that species in PUTHZ's new key to the Oriental spotted *Parastenus* (in litt.). *S. virgula* Fv. is a moderately variable species, but the Holotype of *S. ninii* n. sp. differs from all the exx. of *S. virgula* Fv. examined in the following ways.

Whole body more brassy, and pubescence longer and more evident; elytral spots a little larger, rounder, and less clearly demarcated (bilaterally slightly unequal in Holotype); pronotum with scarcely a trace of median furrow (anteriorly); much deeper depression of sternite VI (practically non-existent in *S. virgula* Fv.), and longer depression of sternite VII; slightly deeper and more acute excision of sternite VIII; on sternite IX the apico-lateral teeth are closer together, and the external denticulation consequently more obvious; aedeagus with median lobe broader, with apex more angular.

The aedeagus of *S. ninii* closely resembles that of *S. separandus* Cam., described from Darjeeling, from which it may be easily distin-

guished by the lateral denticulation of the 9th sternite, and its finer and denser abdominal punctuation.



Figs.: 5A: *Stenus (Parastenus) ninii* n.sp., aedeagus, ventral view; 5B: *ibid.*, male 9th sternite; 6A: *Stenus (Parastenus) perroti* Puthz, aedeagus, ventral view; 6B: *ibid.*, male 9th sternite.

***Stenus (Parastenus) signatipennis* Puthz**

Stenus signatipennis Puthz, 1981, Ent. Bl. Biol. Syst. Käfer 76, 160.

1 ♂, 1 ♀: Taunggyi, 6.IV.1980.

The male listed above has been designated Paratype of this species, described from a single ♂ ex. from Yunan. The female is attributed with reservations to this species by myself, as it differs in some respects from the males. Larger, nearly indistinguishable from exx. of *S. maculifer* Cam. but for the structure of the apicolateral tooth of the valvi-

fers, which are more strongly hooked than in *S. maculifer* Cam., but less markedly so than those of the ♂ ninth sternite in *S. signatipennis* Puthz.

Stenus (Parastenus) abdominalis Fv.

Stenus abdominalis Fauvel, 1895, Rev. d'Ent., XIV, 210.

Stenus abdominalis Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 394.

Stenus abdominalis Puthz, 1969, Bull. Inst. r. Sci. nat. Belg., 45, 9, 32.

1 ♂: Taunggyi, 6.IV.1980.

This species has not been recorded since Fea's original captures in the Karen Hills.

Stenus (Parastenus) tenuimargo Cam.

Stenus tenuimargo Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 459.

Stenus tenuimargo Puthz, 1978, Ann. Hung., 125 f.

1 ♂, 1 ♀: Taunggyi, 6.IV.1980.

Stenus tenuimargo Cam. was described from Darjeeling, but PUTHZ has recently examined specimens from Vietnam and Yunan. The species is new to Burma.

Stenus (Parastenus) perroti Puthz

Stenus perroti Puthz, 1981, Ent. Bl. Biol. Syst. Käfer, 76, 157.

2 ♀♀: Taunggyi, in dead leaves on damp soil in seepage gully, 12.III, 18.IV.1979; 1 ♂: *ibid.*, 22.X.1979; 1 ♀: Taunggyi, at roots of plants at the edge of reservoir, 6.IV.1980.

PUTHZ has described this species from a single ♀ from Tonkin, and named the first two female exx. listed above as Paratypes. A brief description is given here for the first time of the male:

Sternite VII somewhat more densely punctate, and considerably more strongly microreticulate and pubescent than preceding segments, very slightly and broadly excavate on posterior margin; sternite VIII acutely excavate to nearly 1/4th of its length (28:6); sternite IX (fig. 7B) finely denticulate outside apicolateral teeth, the latter curved inwardly fairly strongly; aedeagus: fig. 7A.

Stenus (Parastenus) bicolon posticus Fv.

Stenus posticus Fauvel, 1895, Rev. d'Ent., XIV, 209.

Stenus posticus L. Benick, 1926, Ent. Mitt., 15, 275.

Stenus posticus Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 392.

Stenus bicolon posticus Puthz, 1969, Bull. Inst. r. Sci. nat. Belg., 45, 9, 38.

1 ♀: Taunggyi, under dead leaves in seepage gully, 18.IV.1979;
5 ♂♂, 3 ♀♀: Taunggyi, under dead leaves at roots of plants by reservoir,
6.IV.1980.

Taken by Fea in the Karen Hills, it was recorded by SAWADA (1965) from Taiwan, erroneously, according to PUTHZ (personal communication). The aedeagus is figured by PUTHZ (1969).

Stenus (Parastenus) biplagiatus Puthz

Stenus biplagiatus Puthz, 1970, Bull. Inst. r. Sci. nat. Belg., 46, 18, 14-16.

6 ♂♂, 5 ♀♀: Taunggyi, under dead leaves in seepage gully, 12.III.1979, 1.I.1980; 2 ♂♂, 1 ♀: Taunggyi, 6.IV.1980.

This species is yet another collected by Fea and not since recorded. PUTHZ described it from undetermined material in the Fauvel collection. Some females are practically indistinguishable from exx. of *S. bicolon posticus* Puthz, as the punctuation of the head and pronotum, characteristically slightly closer in this species, is somewhat variable in both species.

Stenus (Parastenus) thoracicus Bck.

Stenus thoracicus L. Benick 1931, Wien. Ent. Zt., 48, 143.

1 ♂: Taunggyi, loc. 2, 27.V.1980.

Only known by the type from Burma.

Stenus (Parastenus) circumflexus Fv.

Stenus circumflexus Fauvel, 1895, Rev. d'Ent., XIV, 211.

Stenus circumflexus Cameron, 1930, Faun. Brit. Ind., Col. Staph. I, 386.

Stenus circumflexus Puthz, 1969, Bull. Inst. r. Sci. Nat. Belg., 45, 9, 33.

1 ♂, 1 ♀: Taunggyi, in very wet vegetable refuse by an artificial waterfall, 6.IV.1980.

Previously known only by the types collected by Fea in the Karen Hills. This species belongs to a group of spotted *Parastenus* that appears

to be phyletically distinct, characterised by their cylindrical, finely bordered abdomen, matt rugose punctuation, and enormous eyes, and research in other parts of S.E. Asia seem to indicate that they are also ecologically distinct, preferring a much wetter environment than the other spotted *Parastenus* (ROUGEMONT, in litt.).

DISCUSSION

It will be seen that the material from Taunggyi is comparable to, if less rich than, that collected by Fea in the Karen Hills. Of the 24 species taken, 20 are montane, belonging to the fauna of what the author, in a previous paper (see bibliography) has termed the « Greater Himalayan » system, and another (*S. angusticollis* Epp.) is limited to the same areas, but not restricted by a minimum altitude. Of the remaining three (*Hypostenus* spp.), one (*S. cursorius* L. Bck.) is ubiquitous and occurs all over the Oriental and Australasian Regions. *S. pustulatus* Bernh. has so far only been recorded from Lower Burma, and the other, *S. amoenus* L. Bck., has a distribution analogous to that of the « Greater Himalayan », but also including S. India and Ceylon, but not Central India. It is possible that this distributional pattern, common to other groups of animals (e.g. *Stenus pulcher* group) often reflects the distribution of ancient forest dwellers, and not necessarily montane species.

Of the montane species, principally *Dianous* and the spotted *Parastenus*, to little is yet known of the distribution of individual species to allow an accurate study of their genesis and migration patterns. PUTHZ (in litt.) has broached the subject regarding the genus *Dianous*, and shows that their origin probably lies in the Central Himalayan foothills, where the greatest number of species and phyletic groups have been found. These insects appear to be less wide-ranging than the spotted *Parastenus*, of which many species, discovered in Burma by Fea, were later found in the Central Himalaya and as far as Taiwan. The distribution of the group as a whole closely resembles that given by PUTHZ for the Oriental *Dianous*, but the Eastern Himalaya, and particularly Burma, are proportionately richer in species than the United Provinces (Uttar Pradesh) of India.

The results of these researches, and of those done by Fea in the Karen Hills, have little in common with the material collected by Malaise in Kachin State, due mainly to the different methods employed. BENICK (1942) states that « collecting was done almost only by sweeping,

not by sifting ». This is evidently true of the insects taken at Kambaiti, where only two *Dianous* and four *Parastenus* spp. are represented in a collection of 12 species (16 out of 88 exx.), the rest being *Hypostenus* spp.. BENICK remarks that these results confirm the observations made in Java by DRESCHER, that Stenines are more often plant-climbers in the tropics, whereas they tend to be ground-living in other areas. This is quite contrary to my own experience in many tropical countries, where I have had but little success with the sweep-net, and it seems certain that Malaise would have obtained many more species from that remarkable locality had other methods been employed.

It is hoped that these questions may be investigated further on future trips to Burma, and also to prospect the hill station of Maymyo in the Norther Shan States.

THANKS

I am grateful to Ko Nini, who acted as my guide in Taunggyi and collected the material recorded for 27.V.1980. I must thank once again Dr. VOLKER PUTHZ, the leading authority on Steninae, for the help and encouragement he continues to give me in the study of these insects. Dr. PUTHZ has determined or confirmed my determinations of many critical species, loaned or given me specimens and papers, and through regular correspondence keeps me informed of his own work in progress, and offered much valuable advice. I continue to be indebted to the staff of the Coleoptera Department of the British Museum (Natural History) who allow me to consult the national collections and provide working facilities in the laboratory.

Table of the known occurrence of *Steninae* on the Shan Plateau

	Tauggyi 1979-80, G. de Rougemont										New to Burma	
	Loc. 1					Loc. 2						Karen Hills, L. Fea
	3.79	4.79	10.79	1.80	4.80	5.80	8.80	12	3-4			
<i>Dianous shan</i> n. sp.			2	1	20	8					X	
<i>D. yao</i> n. sp.					13						X	
<i>Stenus besoni</i> Cam.					2						X	
<i>S. venator</i> Fv.	2			2	17				X			
<i>S. virgula</i> Fv.	10				29				X			
<i>S. nini</i> n. sp.					1						X	
<i>S. maculifer</i> Fv.	5	2	4	4	8	1						
<i>S. stigmaticus</i> Fv.	3				9					X		
<i>S. perroti</i> Puthz		2	1		1					X		
<i>S. abdominalis</i> Fv.					1						X	
<i>S. signatipennis</i> Puthz					2						X	
<i>S. tenuimargo</i> Cam.					2						X	
<i>S. biplagiatus</i> Puthz	2			9	3	3			X			
<i>S. bicolor posticus</i> Fv.	1				8				X			
<i>S. circumflexus</i> Fv.					2				X			
<i>S. feae</i> Fv.										1		
<i>S. thoracicus</i> Bek.										1		
<i>S. verticalis</i> Bek.											X	
<i>S. delectus</i> Puthz					13						X	
<i>S. amoenus</i> Bek.				1	3						X	
<i>S. angusticollis</i> Epp.				2								
<i>S. wasmanni</i> Fv.		1			8					X		
<i>S. cursorius</i> Bek.	1				3							
<i>S. cribellatus</i> Mots.					1							

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ABSTRACT

The fauna and zoogeography of Burma are very little known, and no study of the Staphylinidae of that country has been published since L. BENICK's analysis of the material collected by R. Malaise in 1934, and FAUVEL and PUTHZ' works on that collected by L. Fea in 1887-88. This paper deals with the Steninae collected by the author, who made these insects a particular goal during several short trips to Burma in 1979-80. New species are described, others recorded for the first time from Burma, and the previously unknown males of two species described. The author's results are compared with those of other researches, many field observations recorded, and some discussion is attempted of the faunal affinities of the new material.

RÉSUMÉ

STENINAE NOUVEAUX OU MAL CONNUS DE BIRMANIE (COLEOPTERA, STAPHYLINIDAE)
La faune staphylinienne de la Birmanie est encore peu connue; aucune étude de ces insectes n'est parue depuis celle de L. BENICK du matériel recolté par R. Malaise en 1934 et de celles de FAUVEL et de PUTHZ sur les insectes recueillis par L. Fea en 1887 à 88. Cet article traite des Steninae récoltés par l'auteur, qui a fait de cette sous-famille un but de chasse particulier lors de plusieurs courts voyages en Birmanie en 1979 et 1980. Quatre espèces nouvelles y sont décrites: *Dianous shan* n. sp., *D. yao* n. sp., *Stenus nini* n. sp. et *S. oedichroides* n. sp.; sept autres espèces sont signalées pour la première fois de Birmanie, et les descriptions faites des males, restés jusqu'à présent inconnus, de deux espèces. En outre, les résultats de ces prospections sont comparés à d'autres récoltes, et de nombreuses observations concernant l'éthologie et l'écologie de ces insectes faites sur le terrain, ainsi qu'une discussion des affinités avec les faunes voisines sont présentées en cours de travail.
